

1 . Purpose

This document describes ADEOS-II contingency operation procedures with related agencies. Basic ideas of contingency procedure are described in chapter four. Flow charts are provided to aid in understanding each procedure and confirmation points.

2 . Assumption of contingency operations

Assumptions concerning contingency operations are:

- a. Using Mission Operation Information Files under contingency operations
- b. Some limitations of operation times and reporting procedure are described in MOIS and Nonconformance Reporting and Processing System for ADEOS-II Sensor in Orbit.
- c. When satellite or onboard anomaly happens, trouble shooting and its recovery of normal operation follows the decision of the Nonconformance Counterplan Meeting. (This material explains the work after the decisions of the NCM.)

3 . Types of Contingency Operations

- a. Request of VMS, DMS in MRT
- b. Recovery to Routine Operation
- c. IOCS, DRTS anomaly
- d. Ground station anomaly
- e. Sensor anomaly (updated REQQ)
- f. Emergency GLI-250m operation

4 . Procedure of contingency operation

This paragraph describes each contingency operation procedure.

4 . 1 Request of VMS, DMS in MRT

(1) Operation outline

This operation is executed when anomaly occurs in the satellite, then NASDA will decide to take VMS, DMS level 0 data from overseas stations MRT data in NCM (Nonconformance Counterplan Meeting)

(2) Related Agencies

- a. NASDA
- b. ASF
- c. WFF
- d. Kiruna

(3) Initiation of operation

This operation is decided in NCM and operation executed by NASDA request.

(4) File interface

File name	Contents	Source	Destination	Due time
LV0P	Level 0	EOC	ASF WFF Kiruna	<Principle> ASAP <Final> 2 hours before
VMS L0 data name	VMS L0 data	ASF WFF Kiruna	EOC	ASAP
DMS L0 data name	DMS L0 data	ASF WFF Kiruna	EOC	ASAP

(5) Operation procedure

- ① Making and sending VMS, DMS L0 processing request
 - NASDA makes and sends VMS, DMS L0 processing request to overseas stations by OCL.
 - Overseas station receives VMS, DMS L0 processing request from NASDA by OCL.
 - Kiruna station changes priority of VMS, DMS level 0 data transmit to high priority.
- ② Generating and sending LV0P (2 hours before operation)
 - MMO generates and sends updated LV0P.
 - Overseas stations receive updated LV0P and change operation plan. (2 hours for working time)
- ③ Generating and sending DMS, VMS level 0 data
 - Overseas stations generates DMS, VMS L0 data from MRT data and sends it to NASDA as soon as possible.
- ④ Sending VMS, DMS L0 data transmitting notification
 - Overseas stations make and send VMS, DMS L0 data transmitting notification by OCL after transmit L0 data.

(6) Notes

- MMO will coordinate with overseas stations about delivery time of LVOP.
~~TBD~~

4.2 Recovery to Routine Operation

(1) Operation outline

This operation will be executed in case of the automatic operation of ADEOS-II satellite is disabled by anomaly. An updated REQQ is used to restart routine operation after that anomaly is recovered.

(2) Related Agencies

- a. NASDA
- b. Sensor providers (SeaPAC, CNES, NIES)
- c. Overseas stations (ASF, WFF, Kiruna)
- d. NRT data users (JAFIC, JMA)

(3) Initiation of operation

This operation is started according to decision of the NCM after anomaly of ADEOS-II satellite is recovered.

(4) File interface

File name	Contents	Source	Destination	Due time
REQQ	Operation Request	SeaPAC CNES NIES	EOC	<Principle> 2 hours after receiving Operation change request. <Final> 15 hours before operation start.
REQA	Reply to Operation request	EOC	SeaPAC CNES NIES	<Principle> Sent immediately after generating REQA. <Final> 14 hours before operation start.
REQR	Station operation request	EOC	ASF WFF Kiruna	<Principle> Sent immediately after generating REQR. <Final> 2417 hours before operation start.
STGS	Reply to station operation request	ASF WFF Kiruna	EOC	<Principle> Sent immediately after generating REQR. <Final> 2415 hours before operation start.
OPLN OPL1	Operation plan	EOC	All agencies	<Principle> Sent immediately after generating OPLN. <Final> 2 hours (TBD) before operation start.
SHAQ	Acquisition plan	EOC	ASF WFF Kiruna	<Principle> Sent immediately after generating SHAQ. <Final> 2 hours (TBD) before operation start.
LV0P	Level 0 processing info.	EOC	ASF WFF Kiruna	<Principle> Sent immediately after generating LV0P. <Final> 2 hours (TBD) before operation start.
RTIG	NRT product processing info.	EOC	ASF WFF Kiruna	<Principle> Sent immediately after generating RTIG. <Final> 2 hours (TBD) before operation start.

(5) Operation procedure

① Making and sending Operation change request [Until ~~6321~~ hours before observation start]

- NASDA makes operation change request for overseas stations and sends by OCL.
- All related agencies receive operation change request from NASDA.
- Sensor providers make answer of operation change request and send it to NASDA by OCL for confirmation.

② Generating and transmitting updated REQQ [Until 15 hours before observation start]

- Sensor providers make updated REQQ which operation request include only after restart of routine operation and transmit it to NASDA. [~~Assume a max. of 2 hours to generate~~]
- NASDA receives REQQ from sensor providers. Then if any have format error, NASDA generates REQA and transmits it to sensor provider. This will be repeated until receiving correct format.

③ Generating and transmitting REQR [Until ~~2417~~ hours before observation start]

- NASDA generates REQR and transmits it to overseas stations. [~~Assume a max. of 2 hours to generate~~]

Note. If number of receiving path at overseas station is not changed, REQR is not required.

④ Generating and transmitting STGS [Until 15 hours before observation start]

- Overseas stations generates STGS after receiving REQR and transmits it to NASDA. [within ~~92~~ hours to generate]

⑤ Generating and transmitting SHAQ, OPLN, etc [Until 2 hours (~~TBD~~) before observation start]

- NASDA generates OPLN, SHAQ, LV0P, RTIG and transmits it to related agencies.
- Overseas stations receive OPLN, SHAQ, LV0P and RTIG. Then prepare for operation. [2 hours for preparation]
- Sensor providers and NRT users receive OPLN.

(6) Notes

- Kiruna station can not acquisition data until 2 days from observation re-start.
- Interface between REQR and STGS performed only 1 time.
- If number of receiving path at overseas station is not changed, REQR should

not be required.

4.3 IOCS, DRTS anomaly

(1) Operation outline

This operation is performed when IOCS or DRTS is disabled by anomaly. NASDA changes operation plan from mode 1 operation to mode 2 operation.

(2) Related Agencies

- a. NASDA
- b. Sensor providers (SeaPAC, CNES, NIES)
- c. Overseas stations (ASF, WFF, Kiruna)
- d. NRT data users (JAFIC, JMA)

(3) Initiation of operation

This operation is started according to decision of TACC after anomaly happened to IOCS or DRTS satellite.

(4) File interface

File name	Contents	Source	Destination	Due time
REQR	Station operation request	EOC	ASF WFF Kiruna	<Principle> Sent immediately after generating REQR. <Final> 63 hours (TBD) before operation start.
STGS	Reply to station operation request	ASF WFF Kiruna	EOC	<Principle> Sent immediately after generating REQR. <Final> 61 hours (TBD) before operation start.
OPLN OPL1	Operation plan	EOC	All agencies	<Principle> Sent immediately after generating OPLN. <Final> 2 hours (TBD) before operation start.
SHAQ	Acquisition plan	EOC	ASF WFF Kiruna	<Principle> Sent immediately after generating SHAQ. <Final> 2 hours (TBD) before operation start.
LV0P	Level 0 processing info.	EOC	ASF WFF Kiruna	<Principle> Sent immediately after generating LV0P. <Final> 2 hours (TBD) before operation start.
RTIG	NRT product processing info.	EOC	ASF WFF Kiruna	<Principle> Sent immediately after generating RTIG. <Final> 2 hours (TBD) before operation start.

(5) Operation procedure

- ① Making and sending Operation change request [Until ~~2863~~ hours before observation start]
 - NASDA makes operation change request for all related agencies and sends it by OCL.
 - Overseas stations receive operation change request and prepare for operation

change.

② Generating and transmitting REQR [Until 63 hours ~~(TBD)~~ before observation start]

- NASDA generates REQR and transmits it to overseas stations. [~~Assume a max. of 2 hours to generate~~]

Note. If number of receiving path at overseas station is not changed, REQR is not required.

③ Generating and transmitting STGS [Until 61 hours ~~(TBD)~~ before observation start]

- Overseas stations generate STGS after receiving REQR and transmits it to NASDA. [~~Assume a max. of 2 hours (TBD) to generate~~]

④ Making and sending OPLN re-sending notification

- NASDA makes OPLN re-sending notification and sends it all sensor providers and NRT users by OCL. [Until 2 hours ~~(TBD)~~ before observation start]
- NASDA generates OPLN, OPL1, SHAQ, LV0P, RTIG and transmits it to related agencies. [2hours to generate]

⑥ Receiving and preparing re-planned operation[Until observation start]

- Overseas stations receive OPLN, SHAQ, LV0P and RTIG. Then prepare for operation. [~~Assume a max. of 2 hours for preparation~~]
- Sensor providers and NRT users receive OPLN.

(6) Notes

- If number of receiving path at overseas station is not changed, REQR should not be required.
- Interface between REQR and STGS performed only 1 time.
- Kiruna station can not acquisition data until 10 hours from observation re-start.
- MMO will coordinate with overseas stations about delivery time of LV0P.

4.4 Ground station anomaly

(1) Operation outline

This operation is performed when a ground station is disabled by ground station anomaly.

(2) Related Agencies

- a. NASDA
- b. Sensor providers (SeaPAC, CNES, NIES)
- c. Overseas stations (ASF, WFF, Kiruna)
- d. NRT data users (JAFIC, JMA)

(3) Initiation of operation

This operation is started according to the decision of overseas station(s) to submit operation change request because of ground station anomaly.

(4) File interface

File name	Contents	Source	Destination	Due time
REQR	Station operation request	EOC	ASF WFF Kiruna	<Principle> Sent immediately after generating REQR. <Final> 63 hours (TBD) before operation start.
STGS	Reply to station operation request	ASF WFF Kiruna	EOC	<Principle> Sent immediately after generating REQR. <Final> 61 hours (TBD) before operation start.
OPLN OPL1	Operation plan	EOC	All agencies	<Principle> Sent immediately after generating OPLN. <Final> 2 hours (TBD) before operation start.
SHAQ	Acquisition plan	EOC	ASF WFF Kiruna	<Principle> Sent immediately after generating SHAQ. <Final> 2 hours (TBD) before operation start.
LV0P	Level 0 processing info.	EOC	ASF WFF Kiruna	<Principle> Sent immediately after generating LV0P. <Final> 2 hours (TBD) before operation start.
RTIG	NRT product processing info.	EOC	ASF WFF Kiruna	<Principle> Sent immediately after generating RTIG. <Final> 2 hours (TBD) before operation start.

(5) Operation procedure

- ① Making and sending operation change request **[Until 65 hours before observation start]**
 - Overseas station make operation change request and sends it to NASDA by OCL.
 - NASDA executes reconstructing operation plan.

- ② Generating and transmitting REQR [Until 63 hours ~~(TBD)~~ before observation start]
 - NASDA generates REQR and transmits it to overseas stations. [~~Assume a max. of 2 hours to generate~~]

Note. If number of receiving path at overseas stations is not change, REQR is not required.
 - ③ Generating and transmitting STGS [Until 61 hours ~~(TBD)~~ before observation start]
 - Overseas stations generate STGS after receiving REQR and transmits it to NASDA. [2 hours ~~(TBD)~~ to generate]
 - ④ Making and sending OPLN re-sending notification
 - NASDA makes OPLN re-sending notification and sends it all sensor providers and NRT users by OCL.
 - All related agencies receive OPLN re-sending notification by OCL.
 - ⑤ Generating and transmitting SHAQ, OPLN, etc [Until 2 hours ~~(TBD)~~ before observation start]
 - NASDA generates OPLN, OPL1, SHAQ, LV0P, RTIG and transmits it to related agencies.
 - ⑥ Receiving and preparing re-planned operation[Until observation start]
 - Overseas stations receive OPLN, SHAQ, LV0P and RTIG. Then prepare for operation. [2 hours for preparation]
 - Sensor providers and NRT users receive OPLN.
- (6) Notes
- If number of receiving path at overseas station is not changed, REQR should not be required.
 - Interface between REQR and STGS performed only 1 time.
 - Kiruna station can not acquisition data until 10 hours from observation re-start.
 - Overseas station consider the time of trouble shooting and reconstructing operation plan. If trouble shooting time is much longer than reconstructing operation plan time, submit operation change request to NASDA.
 - MMO will coordinate with overseas stations about delivery time of LV0P.

4.5 Sensor anomaly (updated REQQ)

(1) Operation outline

This operation is performed when sensor provider decide to use updated REQQ for trouble shooting of sensor anomaly or in case that NCM judges that trouble shooting operations could be performed by the OBC automatic commands using an REQQ file.

(2) Related Agencies

- a. NASDA
- b. Sensor providers (~~SeaPAC~~, CNES, NIES)
- c. Overseas stations (ASF, WFF, Kiruna)

(3) Initiation of operation

This operation is started according to the decision of sensor provider that using updated REQQ for trouble shooting and decision of NCM.

(4) File interface

File name	Contents	Source	Destination	Due time
REQQ	Operation Request	SeaPAC CNES NIES	EOC	<Principle> 4 days before operation start. <Final> UT3:00 2 days before operation start.
REQA	Reply to Operation request	EOC	SeaPAC CNES NIES	<Principle> Sent immediately after generating REQA. <Final> UT0:00 2 days before operation start.
OPLN OPL1	Operation plan	EOC	All agencies	<Principle> Sent immediately after generating OPLN. <Final> 2 hours (TBD) before operation start.
LV0P	Level 0 processing info.	EOC	ASF WFF Kiruna	<Principle> Sent immediately after generating LV0P. <Final> 2 hours (TBD) before operation start.

(5) Operation procedure

- ① Making and sending Operation change request [**Until 4 days before observation start**]
 - Sensor provider decides to use updated REQQ for trouble shooting and make and send Operation change request to NASDA.
 - NASDA receive operation change request from sensor provider and prepare for operation change.
- ② Generating and transmitting updated REQQ [**Until 4 days before observation start**]
 - Sensor provider generates REQQ and transmits it to NASDA.

- NASDA receives REQQ from sensor providers. Then if they have format error, NASDA generates REQA and transmits it to sensor provider. This will be repeated until receiving correct format.
- ③ Making and sending OPLN re-sending notification
- NASDA makes OPLN re-sending notification and send it sensor provider which anomaly occurred and overseas stations by OCL.
 - All related agencies receive OPLN re-sending notification by OCL.
- ④ Generating and transmitting OPLN, LV0P[Until 2 hours ~~(TBD)~~ before observation start]
- NASDA generates OPLN, OPL1, LV0P, and transmits it to related agencies.
- ⑤ Receiving and preparing re-planned operation[Until observation start]
- Overseas stations receive LV0P. Then prepare for operation. [~~Assume a max. of 2 hours for preparation~~]
 - Sensor providers receives OPLN.
- (6) Notes
- The transmission of the OPLN is only to sensor provider in which anomaly is found.
 - MMO will coordinate with overseas stations about delivery time of LV0P.
 - SeaPAC continues to send routine REQQs each week, even they have anomaly on SeaWinds.

4.6 Emergency GLI-250m Operation (TBD)

(1) Operation outline

This operation is performed when using GLI-250m for disaster observation immediately.

(2) Related Agencies

- a. NASDA
- b. Overseas stations (ASF, WFF, Kiruna)

(3) Initiation of operation

This operation is started according to the decision of NASDA to observe disaster using by GLI-250m.

(4) File interface

File name	Contents	Source	Destination	Due time
REQR	Station operation request	EOC	ASF WFF Kiruna	<Principle> Sent immediately after generating REQR. <Final> 63 hours(TBD) before operation start.
STGS	Reply to station operation request	ASF WFF Kiruna	EOC	<Principle> Sent immediately after generating REQR. <Final> 61 hours(TBD) before operation start.
OPLN OPL1	Operation plan	EOC	All agencies	<Principle> Sent immediately after generating OPLN. <Final> 2 hours (TBD) before operation start.
SHAQ	Acquisition plan	EOC	ASF WFF Kiruna	<Principle> Sent immediately after generating SHAQ. <Final> 2 hours (TBD) before operation start.
LV0P	Level 0 processing info.	EOC	ASF WFF Kiruna	<Principle> Sent immediately after generating LV0P. <Final> 2 hours (TBD) before operation start.
RTIG	NRT product processing info.	EOC	ASF WFF Kiruna	<Principle> Sent immediately after generating RTIG. <Final> 2 hours (TBD) before operation start.

(5) Operation procedure

- ① Making and sending Operation change request **[Until 63 hours (TBD) before observation start]**
 - NASDA makes operation change request for overseas stations and sends it by OCL.
 - Overseas stations receive operation change request and prepare for operation change.
- ② Generating and transmitting REQR **[Until 63 hours (TBD) before observation**

start]

- NASDA generates REQR and transmits it to overseas stations. [**2 hours to generate**]

Note. If number of receiving path at overseas stations is not changed, REQR is not required.

③ **Generating and transmitting STGS [Until 61 hours (TBD) before observation start]**

- Overseas stations generate STGS after receiving REQR and transmits it to NASDA. [**Assume a max. of 2 hours (TBD) to generate**]

④ **Making and sending OPLN re-sending notification**

- NASDA makes OPLN re-sending notification and sends it all sensor providers and NRT users by OCL.

⑤ **Generating and transmitting SHAQ, OPLN, etc [Until 2 hours (TBD) before observation start]**

- NASDA generates OPLN, OPL1, SHAQ, LV0P, RTIG and transmits it to related agencies.

⑥ **Receiving and preparing re-planned operation[Until observation start]**

- Overseas stations receive OPLN, SHAQ, LV0P and RTIG. Then prepare for operation. [**2 hours for preparation**]
- Sensor providers and NRT users receive OPLN.

(6) **Notes**

- If number of receiving path at overseas station is not changed, REQR should not be required.
- Interface between REQR and STGS performed only 1 time.
- Kiruna station can not acquisition data until 10 hours from observation re-start.